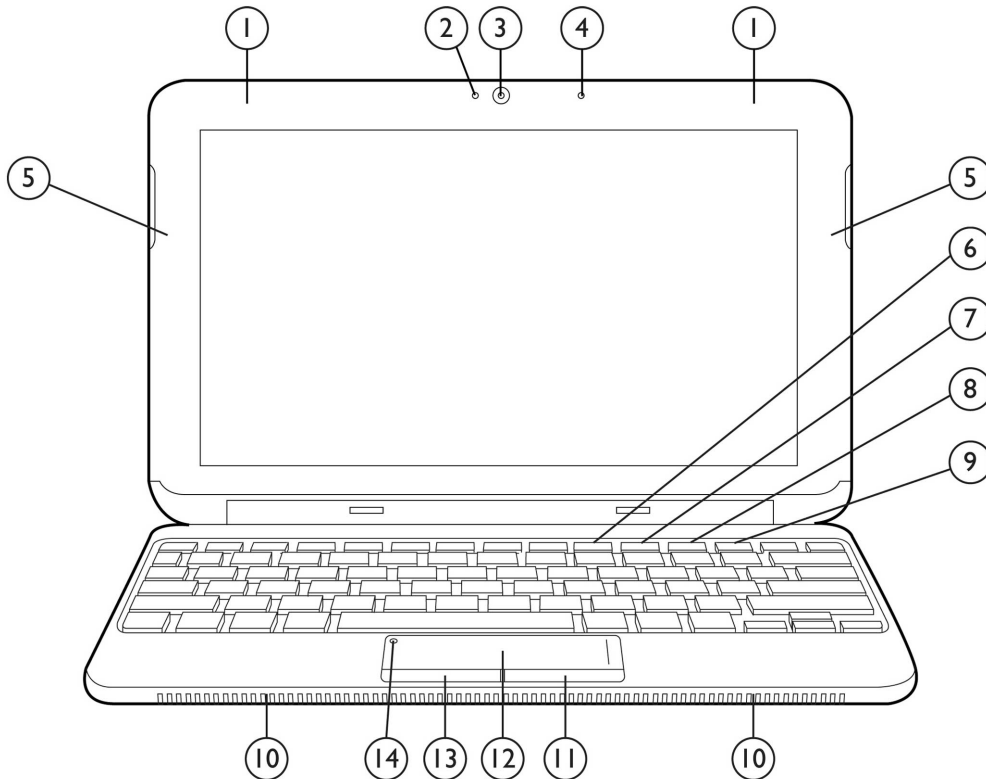
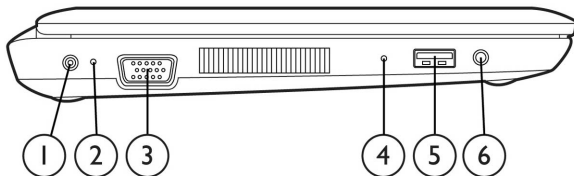


Overview



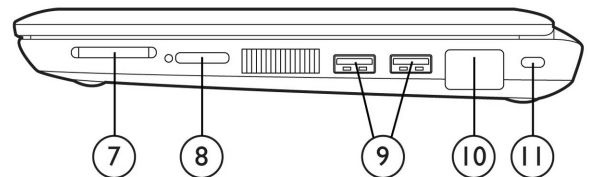
- | | |
|-------------------------------------|--|
| 1. WLAN antennas | 8. Volume mute function key with LED |
| 2. Webcam light | 9. Wireless on/off function key with LED |
| 3. VGA webcam | 10. Stereo speakers |
| 4. Integrated microphone | 11. Right touchpad click zone |
| 5. WWAN antennas (with WWAN option) | 12. Touchpad |
| 6. Volume down function key | 13. Left touchpad click zone |
| 7. Volume up function key | 14. Touchpad on/off button with LED |

Left View



1. Power connector
2. Battery charging LED indicator
3. VGA/external monitor
4. Internal storage activity LED

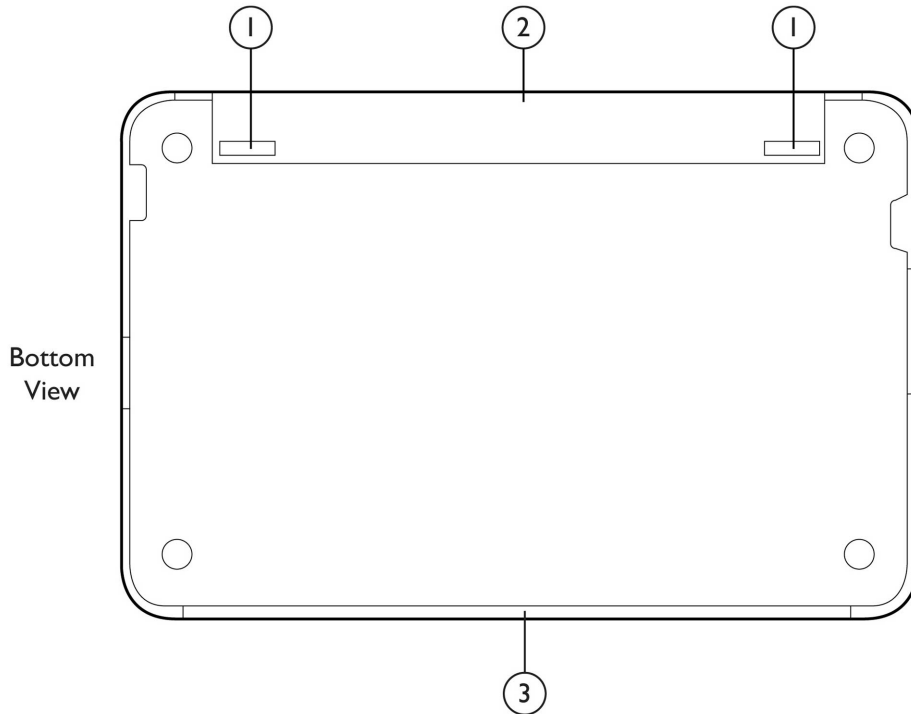
Right View



7. Media Card Reader
8. Power button with LED
9. (2) USB 2.0 ports
10. RJ-45/Ethernet jack with cover

Overview

- | | |
|------------------------------------|--------------------------|
| 5. USB 2.0 port | 11. Kensington lock slot |
| 6. Combo stereo headphone/mic jack | |



- | | |
|----------------------------|---|
| 1. Battery release latches | 3. Memory module compartment (under bottom cover) |
| 2. Battery bay | |

At A Glance

- Ultra-portable light-weight design starting at 2.50 lb (1.13 kg) and 0.90 in (22.9 mm) thin at front
- Stylish new polished black finish
- 93% full-size QWERTY keyboard, touchpad with scroll zone
- 160/250 GB 7200 rpm hard drive
- 10.1-inch diagonal widescreen LED-backlit WSVGA display (1024 x 600)
- Intel® Atom™ processor
- Flexible wireless connectivity options:
 - Integrated HP un2420 EV-DO/HSDPA Mobile Broadband Module provides worldwide Gobi mobile Internet technology
 - Integrated 802.11 a/b/g/n or b/g wireless LAN module
 - Integrated 802.11 b/g wireless and Bluetooth combo adapter
- Integrated VGA Webcam
- Flexible battery solutions: 3-cell for lightest weight or 6-cell for longer battery life
- 5-in-1 Media Card Reader

Standard Features

Processors	Intel Atom N450 Processor (1.66 GHz, 512 KB L2 cache, 667 MHz FSB) Intel Atom N470 Processor (1.83 GHz, 512 KB L2 cache, 667 MHz FSB), planned March 2010 NOTE: Intel's numbering is not a measurement of higher performance. Processor speed denotes maximum performance mode; processor will run at lower speeds in battery optimization mode.	
Operating System	Preinstalled	Genuine Windows 7 Starter 32* Genuine Windows XP Home SUSE Linux Enterprise 11 FreeDOS Contact your reseller or HP sales representative for additional operating system choices and domain join support * System may require upgraded and/or separately purchased hardware and/or a DVD drive to install the Windows 7 software and take full advantage of Windows 7 functionality. See http://www.microsoft.com/windows/windows-7/ for details.
Chipset	Intel NM10 Express Chipset	
Graphics	Intel Graphics Media Accelerator 3150	
Display	Internal	10.1-inch diagonal widescreen LED-backlit WSVGA display with 1024 x 600 resolution
	External	Up to 32-bit per pixel color depth VGA port supports resolutions up to 2048 x 1536 at 75 Hz, and lower resolutions at up to 100 Hz NOTE: Resolutions are dependent upon monitor capability, and resolution and color depth settings.
Memory	Standard	1 GB or 2 GB DDR2 SDRAM SODIMM* one SODIMM slot
	Maximum	Supports up to 2 GB maximum** * All memory modules operate at the maximum system supported speed of 667 MHz. ** Maximum memory is 1 GB with some configurations. NOTE: Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility.
Communications	Integrated Realtek Ethernet (10/100/1000 NIC)	

Standard Features

Wireless Devices

Support for secure, integrated wireless LAN and wireless WAN options featuring support for the latest industry standards. Mobile Broadband (WWAN) requires a Windows operating system and is available in select countries as a factory configurable feature only.

HP un2420 EV-DO/HSPA Mobile Broadband Module Integrated mobile broadband module with Gobi global mobile Internet technology that provides connectivity to both CDMA (EVDO) and UMTS (HSPA) networks. It also provides GPS functionality for various mapping applications and security applications such as Computrace LoJack Pro for HP ProtectTools.

NOTE: Separately purchased mobile network operator service is required.

Two 850/900/1575/1800/1900/2100 MHz antennas integrated in the top of the display panel support current and future WWAN technologies.

All 802.11 integrated wireless LAN options

Wi-Fi certified*

Wired Equivalent Privacy (WEP) support up to 128-bit keys

Wi-Fi Protected Access (WPA) and WPA2 support

802.1x authentication support, including EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, and LEAP

Advanced Encryption Standard (AES) support

Dual antennas integrated in the display enclosure

Broadcom 4322AGN 802.11a/b/g/n Wi-Fi Adapter

Integrated support for 802.11 a, b, g, and n

Cisco Compatible Extensions support

Up to 300 mbps data rate

Broadcom 4312G 802.11b/g Wi-Fi Adapter

Integrated support for 802.11 b and g

Cisco Compatible Extensions support

Up to 54-mbps data rate

Broadcom 4312G 802.11b/g Wi-Fi and 2070 Bluetooth 2.1+EDR Combo Adapter

Integrated support for 802.11 b and g

Cisco Compatible Extensions support

Up to 54-mbps data rate

Bluetooth Specification v2.1 compliant

Works with a wide range of Bluetooth devices

Keyboard

Keyboard is 93% of full size, 101/102-key compatible with isolated inverted-T cursor control keys, both left and right control and alt keys, 12 function keys, and hotkey combinations for audio volume, power conservation, brightness, and other features. US and international key layouts are available.

Pointing Device

Touchpad with right and left click zones, gesture support

Expansion Card Slots

Media Card Reader

Supports SD (Secure Digital), MMC (MultiMedia Card), Memory Stick, Memory Stick Pro, xD-Picture card

Storage

Internal Storage Device

160 GB 7200 rpm SATA Hard Drive

250 GB 7200 rpm SATA Hard Drive*

* Not available with some configurations.

NOTE: Up to 15 GB is reserved for the system recovery software.

Standard Features

Interfaces	External Monitor	One – VGA
	Combo stereo headphone/mic jack	One
	Power Connector	One
	RJ-45/Ethernet	One
	USB 2.0	Three
	LED Status Indicators	Ten

Audio	IDT 92HD80 High Definition audio Integrated stereo speakers Integrated microphone Combo stereo headphone/mic jack Integrated VGA webcam
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Software	Software with Windows Operating Systems	HP Support Assistant (Windows 7 only) HP Connection Manager Microsoft Office Ready with 60-day Office Professional 2007 Trial Edition (select models) Microsoft Office Professional 2007 (Japan only) Microsoft Office Personal 2007 (Japan only) McAfee Total Protection* Adobe Flash Player PDF Complete

* 60 day trial period for McAfee Total Protection for Small Business software. Internet access required to receive updates. First update included. Subscription required for updates thereafter.

Security	Standard Features	Kensington Lock Slot BIOS support for Computrace*
		* The Computrace agent is shipped turned off, and must be activated by customers when they purchase a subscription with terms ranging from one to five years. For more information on HP security solutions refer to: http://www.hp.com/go/security .

Power Supply	External 40-watt AC adapter, 3.3-foot (1-meter) power cord included Total length including External AC adapter is 8.55 feet (2.59 meter).
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Battery	Primary Battery	3-cell (28 Wh) Li-Ion 6-cell (62 Wh) high capacity Li-Ion

Standard Features

Battery Life	6-cell Primary Battery and Hard Drive	Up to 9 hours 30 min
	3-cell Primary Battery and Hard Drive	Up to 4 hours 15 min

NOTE: The listed battery life measurements were taken on models running Microsoft Windows XP. Battery life will vary depending on the product configuration, product model, applications loaded on the product, power management settings of the product, and the product features used by the customer. As with all batteries, the maximum capacity of this battery will decrease with time and usage.

System Standby Time	Up to 1 week
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Power Conservation	Standby ACPI compliance
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Service and Support	HP Services includes a one-year standard parts and labor warranty, pick-up or carry-in, and toll-free 7 x 24 hardware technical phone support (depending on model). On-site service and warranty upgrades are also available (depending on model). NOTE: Certain restrictions and exclusions apply. Consult the HP Customer Support Center for details. http://h20000.www2.hp.com/bizsupport/TechSupport/ProductRoot.jsp .
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Options

Storage	HP USB Diskette Drive	DC361B
	HP External USB 2.0 CD/DVD R/RW Drive	FS943AA
	HP 250 GB Pocket Media Drive	FE477AA
Memory	HP 2-GB PC2-6400 DDR2 SODIMM	KT293AA
Expansion	HP USB 2.0 Docking Station	FQ834AA
	HP Essential USB 2.0 Port Replicator	AQ731AA
	HP Basic Adjustable Stand	AL549AA
Power	HP Mini 40W AC Adapter	TBD
	HP Mini 2102 3-cell Battery	TBD
	HP Mini 2102 6-cell Battery	TBD
Carrying Cases	HP Ultra-portable Carrying Case	AL539AA
	HP Basic Carrying Case	AJ078AA
	HP Value Nylon Case	RR314AA
	HP Universal Nylon Case	RR315AA
	HP Executive Leather Case	RR316AA
	HP Deluxe Nylon Backpack	RR317AA
	HP Deluxe Roller Case	GD405AA
	HP Basic Backpack	AM863AA
	HP Basic Messenger Carrying Case	AP355AA
	HP Professional 10.1 Sleeve	AW209AA
	HP Professional Series Carrying Case	AT886AA
	HP Professional Series Backpack	AT887AA
	HP Professional Series Messenger	AT888AA
	HP Professional Series Designer Tote	AT889AA
	HP Professional Series Slip Case	AT890AA
	HP Elite Series Designer Tote	AT891AA
	HP Professional Series Quick Case	AT892AA
Security	HP/Kensington MicroSaver Security Lock	PC766A

Options

Input/Output Devices	HP USB Keyboard & Mouse Bundle	RC465AA
	HP USB-PS/2 Optical Mouse	DC369A
	HP USB Optical Travel Mouse	RH304AA
	HP Wireless Optical Mouse	AR085AA
	HP Bluetooth Headset	AR084AA
	HP Mobile USB 2.0 Speakers	FS944AA
	HP Mobile Productivity Bundle	AQ729AA

Memory

Supports PC2-6400 DDR2 SDRAM*

One SODIMM slot

SODIMM sizes supported: 1 GB and 2 GB**

Standard Memory	1 GB (1 GB x 1)
	2 GB (2 GB x 1)

Optional Memory Upgrades	Memory slot is user accessible. Please refer to the Hardware and Software Guide for installation procedures.
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NOTE: Due to the non-industry standard nature of some third-party memory modules, we strongly recommend using only HP branded memory modules to ensure compatibility.

Memory Upgrades	HP 2-GB PC2-6400 DDR2 SODIMM*	KT293AA
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* Runs at maximum system supported speed of 667 MHz

** Maximum memory is 1 GB with some operating systems.

Storage

Internal Storage Device

Hard Drives (2.5-inch SMART SATA)

160 GB 7200 rpm

250 GB 7200 rpm

Quantity Supported

One

One

Drive Bay

Dedicated hard drive bay

Dedicated hard drive bay

Technical Specifications

System Unit	Dimensions (HxWxD)	0.90 (at front) x 10.55 x 7.00 in 22.9 (at front) x 268 x 178 mm
	Weight	Starting at 2.50 lb (1.13 kg)
NOTE: Height varies depending upon where on the notebook the measurement is made. Weight includes 3-cell battery, 1 GB memory, Solid State module, 802.11 wireless communications module. Weight varies by configuration and components.		
Stand-Alone Power Requirements	Normal Operating Voltage	19 V
	Average Operating Power	TBD W
	Max Operating Power	< 40 W
Temperature	Operating	32° to 95° F (0° to 35° C)
	Non-operating	–4° to 140° F (–20° to 60° C)
Relative Humidity	Operating	10% to 90%, non-condensing
	Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
Shock	Operating	125 G, 2 ms, half-sine
	Non-operating	200 G, 2 ms, half-sine
Random Vibration	Operating	0.75 grms
	Non-operating	1.50 grms
Altitude (unpressurized)	Operating	–50 to 10,000 ft (–15.24 to 3,048 m)
	Non-operating	–50 to 40,000 ft (–15.24 to 12,192 m)
Industry Standard Certifications	UL	Yes
	FCC Compliance	Yes
	ENERGY STAR®	Yes*
	EPEAT	TBD (Silver target)**
	ICES	Yes
	Australia / NZ C-Tick Compliance	Yes
	CCC	Yes
	Japan VCCI Compliance	Yes
	MIC / KCC	Yes
	BSMI	Yes
	CE Marking Compliance	Yes
	BNCI or BELUS	Yes
	CIT	Yes
	GOST	Yes
	Saudi Arabian Compliance (ICCP)	Yes
	SABS	Yes

Technical Specifications

* Configurations of the HP Mini 2102 that are ENERGY STAR qualified are identified as HP Mini 2102 ENERGY STAR on HP websites and on www.energystar.gov.

** EPEAT registration varies by country. See www.epeat.net for registration status by country. EPEAT status listed above applies to U.S.

HP 40W AC Adapter	Dimensions	3.66 x 1.57 x 1.14 in (9.3 x 4.0 x 2.9 cm)	
	Weight	0.35 lb (160 g)	
	Input	100 to 240 VAC	
		Input Efficiency	83% min at 115 VAC
		Input frequency range	47 to 63 Hz
	Output	Input AC current	1.1 A at 90 VAC, 0.55 A at 180 VAC
		Output power	40W
		DC output	19.5V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<5.0A, Over voltage protection- 29V max automatic shutdown
	Connector	2 pin/grounded, mates with interchangeable cords	
	Environmental Design	Operating temperature	32° to 104° F (0° to 40° C)
		Non-operating (storage) temperature	-4° to 149° F (-20° to 65° C)
		Altitude	0 to 10,000 ft (0 to 3,048 m)
		Humidity	20% to 80%
	EMI and Safety Certifications	Storage Humidity	10% to 90%
		CE Mark - full compliance with LVD and EMC directives; Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE; MTBF - over 200,000 hours at 25°C ambient condition.	

Display

Technical Specifications

10.1-inch widescreen LED WSVGA (1024 x 600)	Active Area (W x H)	8.77 x 4.93 in (22.27 x 12.52 cm)
	Diagonal Size	10.1 in (25.7 cm)
	Surface Treatment	Anti-glare
	Contrast Ratio	400:1 (typical)
	Refresh Rate	60 Hz
	Brightness	200 nit (typical)
	Pixel Resolution	Pitch 0.2175mm(H) x 0.2088mm(V)
		Format 1024 x 600
		Configuration RGB Vertical Stripe
	Backlight	LED
	PPI	119
	Viewing Angle	-45L +45R -35D +25U (typical)

Internal Storage

250 GB 7200 rpm SATA Hard Drive	Drive Weight	0.25 lbs (115g)
	Capacity	250 GB
	Height	0.37 in (9.5 mm)
	Width	2.75 in (70 mm)
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ
	Transfer Rate	Synchronous (maximum) 100 MB/s (Drive Capability)
	Seek Time	Single Track 1.5 ms
	(typical reads, including settling)	Average 11 ms
		Maximum 22 ms
	Rotational Speed	7200 rpm
	Logical Blocks	488,397,168
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]
	Features	ATA Security

Technical Specifications

160 GB 7200 rpm SATA Hard Drive	Drive Weight	0.25 lb (115 g)	
	Capacity	160 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	Synchronous (maximum)	100 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	Single Track	1.5 ms
		Average	11 ms
		Maximum	22 ms
	Rotational Speed	7200 rpm	
	Logical Blocks	312,581,808	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	

Audio

Hardware	Implementation	IDT 92HD80 High Definition audio	
	Volume Controls	Up, down, and mute function keys	
	Full Duplex	Yes	
	Sound Blaster Pro compatible	Yes	
	Combo stereo headphone/mic jack	Device Used	Operation
		Headphone	Headphone works. Integrated microphone works.
		Microphone	External microphone does not work. Integrated microphone works.
		Combo headphone / microphone without "Answer" button	Headphone and microphone in headset work as advertised.
		Combo headphone / microphone with "Answer" button	Headphone and microphone in headset work initially whenever headset is plugged in; integrated microphone in PC is disabled. If "answer" button is pushed, microphone in headset is disabled, integrated microphone in PC is enabled.

Technical Specifications

Audio Output Quality	Frequency Response	20 Hz - 20 kHz
	Signal to Noise Ratio	>95 db
	Total Harmonic Distortion	0.01%
	Play/Record Sampling Rate(s)	20 Hz – 20 kHz
	DAC	24-bit
	ADC	24-bit

Internal Speakers	Power Rating	2 Watts
	Impedance	4 Ohms

Communications

Integrated Realtek RTL8153EH 10/100 NIC	Ethernet Features	10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14)
		100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30)
		Auto-Negotiation (Automatic Speed Selection)
		Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s
		IEEE 802.1p QoS (Quality of Service) Support
	Power Management	IEEE 802.1q VLAN support
		IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable)
		ACPI compliant – multiple power modes
		Situation-sensitive features reduce power consumption
		Advanced link down power saving for reducing link down power consumption
	Performance Features	TCP/IP/UDP Checksum Offload (configurable)
		Large send offload and Giant send offload
	Manageability	Receiving Side Scaling
		Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only)
	Interface	PXE 2.1 Remote Boot
		Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30))
	NIC Device Driver Name	Comprehensive diagnostic and configuration software suite
		Virtual Cable Doctor for Ethernet cable status
		PCI Express 1.1 x1 to fully support ASPM L0s/L1 and CLKREQ

Technical Specifications

HP un2420 EV-DO/HSPA Mobile Broadband Module	Technology/Operating Bands	GSM/GPRS/EDGE: 850MHz(Cell), 900MHz(EGSM), 1800MHz(DCS), 1900MHz (PCS) UMTS/WCDMA with receive diversity: 2100MHz (UTRA FDD Band I), 1900MHz (UTRA FDD Band II), 900MHz (UTRA FDD Band VIII), 850MHz (UTRA FDD Band V) 1xEVDO/1xRTT with receive diversity: 850MHz (Band Class0-Cell), 1900MHz (Band Class1-PCS)
	Wireless Protocol Standards	GSM/GPRS/EDGE: Class B, Multi-slot operation, coding schemes CS1 - CS4 and MSC1 - MSC9. UMTS/WCDMA: Release 99 and Release 6 CDMA: 1xEVDO Release 0 and Release A, IS-95A, IS-95B, IS-2000
	Wireless Parametric Standards	Meets or exceeds TIA/EIA IS-98-D
	Maximum Data Rates	UMTS (HSPA) - 7.2 Mbps (Download), 2.0Mbps (Upload) CDMA (EVDO Release A) - 3.1 Mbps (Download), 1.8Mbps (Upload)
	GPS	Standalone GPS enabled
	GPS Bands	L1 - 1575.42 MHz
	Maximum Output Power	GSM/GPRS/EDGE: 32dBm (+/-1) WCDMA: 24dBm (+/-1) CDMA: 24dBm (+/-1)
	Maximum Power Consumption	2500mA (peak); 1000mA (average)
	Power Consumption, Sleep Mode	5 mA
	Power Management	USB selective suspend Integrated notebook wireless button
	Antenna Type	Dual high efficiency 5 band antennae with spatial diversity, mounted in the display enclosure
	Form Factor	PCI-Express MiniCard, USB 2.0 interface
	Weight	11.5 g
	Dimensions (Length x Width x Thickness)	2.01 x 1.18 x 0.18 in (51 x 30 x 5 mm)
	Voltage, Operating	3.3v +/- 10%
	Temperature, Operating (from TIA/EIA/IS-98-D)	-22° to 140° F (-30° to 60° C) (full RF performance) -22° to 167° F (-30° to 75° C) (reduced RF performance)
	Temperature, Non-operating, 96 hours (from MIL-STD 202 Method 108)	-40° to 185° F (-40° to 85° C)
	Humidity, Non-operating	85% relative humidity for 48 hours @ 185° F (85° C) (non-condensing)
	Configuration Utilities	HP Connection Manager
	LED Activity	LED Off - Radio Off; Solid LED On - Radio On

Broadcom 4322AGN
802.11a/b/g/n

Wireless LAN Standards IEEE 802.11a
IEEE 802.11b



Technical Specifications

WiFi Adapter

	IEEE 802.11g IEEE 802.11n
Interoperability	Wi-Fi certified (802.11abg only) Cisco Compatible Extensions Program compliant (802.11abg only) with Microsoft Windows XP
Frequency Band	2.4 GHz and 5 GHz
Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n (draft): 6, 6.5, 9, 12, 13, 13.5, 18, 19.5, 24, 26, 27, 36, 39, 40.5, 48, 52, 54, 58.5, 65, 78, 81, 104, 108, 117, 121.5, 130, 135, 162, 216, 243, 270, 300 Mbps
Frequency Support	20 MHz: 2.4 GHz and 5 GHz bands 40 MHz: 2.4 GHz and 5 GHz bands
Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM
Security¹	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST. Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows XP.
Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.
Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between access points
Output Power (for CCK)²	17 dBm
Output Power (for OFDM; power varies by data rate)²	15 dBm
Power Consumption	Idle associated: 250 mW Idle unassociated: 150 mW Transmit/Receive 20 MHz channel: 2.0 W (max) Transmit/Receive 40 MHz channel: 2.0 W (max)
Power Management	ACPI compliant power management 802.11 compliant power saving mode
Receiver Sensitivity³	270 Mbps: -61dBm, , 54 Mbps: -72 dBm, 11 Mbps: -85 dBm , 1 Mbps: -92 dBm
Antenna type	High efficiency dual band antenna with spatial diversity, mounted in the display enclosure
Form Factor	PCI-Express Half-MiniCard
Weight	0.013 lb (6 g)
Dimensions	0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm)
Operating Voltage	3.3v +/- 10%

Technical Specifications

Temperature	Operating	14° to 149° F (-10° to 65° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
Humidity	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
Altitude	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)
Configuration Utility ⁴	Microsoft Windows XP	
	Choice of Configuration Utility:	
	• Microsoft Windows XP Wireless Network Connection Manager • Broadcom Wireless Configuration Utility (required for Cisco Compatible Extensions support)	
LED Activity	LED Off - Radio OFF; Solid LED On - Radio ON	
1. Check latest software/driver release for updates on supported security features. 2. Maximum output power may vary by country according to local regulations. 3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation). 4. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants.		

Broadcom 4312G 802.11b/g WiFi Adapter

Wireless LAN Standards	IEEE 802.11b IEEE 802.11g
Interoperability	Wi-Fi certified Cisco Compatible Extensions Program compliant with Microsoft Windows Vista and XP (details at: http://www.hp.com/go/notebooks/WLAN)
Frequency Band	2.4 GHz
Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM
Security ¹	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST. Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows Vista and XP only.
Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.
Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between access points
Output Power (for CCK) ²	17 dBm , nominal
Output Power (for OFDM; power varies by data rate) ²	15 dBm , nominal

Technical Specifications

Power Consumption	Idle associated: 250 mW Idle unassociated: 150 mW Transmit: 2.0 W (max) Receive: 2.0 W (max)
Power Management	ACPI compliant power management 802.11 compliant power saving mode
Receiver Sensitivity ³	54 Mbps: -71 dBm, 11 Mbps: -85 dBm , 1 Mbps: -95 dBm
Antenna type	High efficiency dual band antenna with spatial diversity, mounted in the display enclosure
Form Factor	PCI-Express Half-MiniCard
Weight	0.013 lb (6 g)
Dimensions	0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm)
Operating Voltage	3.3v +/- 10%
Temperature	Operating 14° to 149° F (–10° to 65° C) Non-operating –40° to 176° F (–40° to 80° C)
Humidity	Operating 10% to 90% (non-condensing) Non-operating 5% to 95% (non-condensing)
Altitude	Operating 0 to 10,000 ft (3,048 m) Non-operating 0 to 50,000 ft (15,240 m)
Configuration Utility ⁴	Microsoft Windows XP Choice of Configuration Utility: ● Microsoft Windows XP Wireless Network Connection Manager ● Broadcom Wireless Configuration Utility (required for Cisco Compatible Extensions support) Microsoft Windows Vista ● Microsoft Windows Vista Wireless Network Connection Manager ● Broadcom IHV extensions for Windows Vista available to support Cisco Compatible Extensions.
LED Activity	LED Off – Radio OFF; Solid LED On – Radio ON 1. Check latest software/driver release for updates on supported security features. 2. Maximum output power may vary by country according to local regulations. 3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation). 4. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista.

Broadcom 4312G 802.11b/g WiFi and 2070 Bluetooth 2.1+EDR Combo Adapter	Wireless LAN Standards	IEEE 802.11b IEEE 802.11g
	Interoperability	Wi-Fi certified Cisco Compatible Extensions Program compliant with Microsoft Windows Vista and XP (details at: http://www.hp.com/go/notebooks/WLAN)
	Frequency Band	2.4 GHz

Technical Specifications

Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM
Security¹	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST. Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows Vista and XP only.
Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.
Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between access points
Output Power (for CCK)²	17 dBm, nominal
Output Power (for OFDM; power varies by data rate)²	15 dBm, nominal
Power Consumption	Idle associated: 250 mW Idle unassociated: 150 mW Transmit: 2.0 W (max) Receive: 2.0 W (max)
Power Management	ACPI compliant power management 802.11 compliant power saving mode
Receiver Sensitivity³	54 Mbps: -71 dBm, 11 Mbps: -85 dBm , 1 Mbps: -95 dBm
Antenna type	High efficiency dual band antenna with spatial diversity, mounted in the display enclosure
Form Factor	PCI-Express Half-MiniCard
Weight	0.013 lb (6 g)
Dimensions	0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm)
Operating Voltage	3.3v +/- 10%
Temperature	Operating 14° to 149° F (–10° to 65° C) Non-operating –40° to 176° F (–40° to 80° C)
Humidity	Operating 10% to 90% (non-condensing) Non-operating 5% to 95% (non-condensing)
Altitude	Operating 0 to 10,000 ft (3,048 m) Non-operating 0 to 50,000 ft (15,240 m)
Configuration Utility⁴	Microsoft Windows XP Choice of Configuration Utility: • Microsoft Windows XP Wireless Network Connection Manager • Broadcom Wireless Configuration Utility (required for Cisco Compatible Extensions support)

Technical Specifications

Microsoft Windows Vista

- Microsoft Windows Vista Wireless Network Connection Manager
- Broadcom IHV extensions for Windows Vista available to support Cisco Compatible Extensions.

LED Activity

LED Off – Radio OFF; Solid LED On – Radio ON

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).
4. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista.

Bluetooth 2.1 Wireless Technology

Bluetooth Specification	2.1 Compliant
Dimensions	1.18 x 0.26 x 0.13 in (30 x 6.5 x 3.25 mm)
Frequency Band	2402 to 2480 MHz
Number of Available Channels	79 (1 MHz) available channels
Data Rates and Throughput	3 Mbps data rate; throughput up to 2.17 Mbps Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric
Transmit Power	-6 dBm to 4 dBm (Bluetooth Class II)
Receiver Sensitivity	Better than -80 dBm at 0.1 % raw bit error rate
Power Consumption	Peak (Tx) 264 mW Peak (Rx) 231 mW Sleep <1 mW
Antenna	Internally integrated within module
Range	Up 33 ft (10 m)
Electrical Interface	USB 2.0 compliant Microsoft Windows Plug and Play compliant
Bluetooth Software Supported	Broadcom Bluetooth for Microsoft Windows Bluetooth Software
Link Topology	Point to Point, Multipoint Pico Nets up to 7 slaves
Security	Full support of Bluetooth Security Provisions
Power Management	Microsoft Windows ACPI, and USB Bus Support Self configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff
Certifications	All necessary regulatory approvals for supported countries, including: FCC (47 CFR) Part 15C, Section 15.247 & 15.249 ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark

Technical Specifications

Temperature	Operating	−4° to 158° F (−20° to 70° C)
	Non-operating	−40° to 176° F (−40° to 80° C)
Humidity	Operating	10% to 90%
	Non-operating	5% to 95%
Altitude	Operating	15,000 ft (4,572 m)
	Non-operating	40,000 ft (12,192 m)
Bluetooth Profiles Supported	Serial Port Profile (SPP) ¹	
	Service Discovery Application Profile (SDAP)	
	Dial-Up Networking (DUN) ^{1,2}	
	Generic Object Exchange Profile (GOEP) ^{1,2}	
	Object Push Profile (OPP) ^{1,2}	
	File Transfer Profile (FTP)	
	Synchronization Profile (SYNC)	
	Hard Copy Cable Replacement (HCRP) ^{1,2}	
	Personal Area Networking Profile (PAN) ^{1,2}	
	Human Interface Device Profile (HID) ^{1,2}	
	FAX Profile (FAX)	
	Basic Imaging Profile (BIP) ²	
	Headset Profile (HSP)	
	Hands Free Profile (HFP)	
	Advanced Audio Distribution Profile (A2DP)	

¹ indicates the profile is supported by Microsoft Windows XP SP2

² indicates the profile is part of Windows Vista

Environmental Data	Eco-Label Certifications	This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:		
		• US Energy Star • IT ECO declaration • EPEAT - Silver where HP registers commercial desktop products. See http://www.epeat.net for registration status in your country.		
	System Configuration	The configuration used for the Energy Consumption and Declared Noise Emissions data for the Convertible Mini tower Desktop model is based on a "Typically Configured Notebook"		
Energy Consumption		115 VAC	230 VAC	100 VAC
	Normal Operation	8.86 W	8.86 W	8.86 W
	Sleep (Energy Star low power mode)	0.89 W	0.89 W	0.89 W
	Off	0.59 W	0.59 W	0.59 W
Heat Dissipation*		115 VAC	230 VAC	100 VAC
	Normal Operation	30 BTU/hr	30 BTU/hr	30 BTU/hr
	Sleep	3 BTU/hr	3 BTU/hr	3 BTU/hr

Technical Specifications

Off

2 BTU/hr

2 BTU/hr

2 BTU/hr

* Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)

System Fan Off

Sound Power
(LWAd, bels)

Sound Pressure
(LpAm, decibels)

Idle

2

23.5

Fixed Disk

2.3

23.1

(random writes)

System fan is usually off except when charging the battery

Batteries

This battery(s) in this product comply with EU Directive 2006/66/EC

Batteries used in the product do not contain:

- Mercury greater the 5ppm by weight
- Cadmium greater than 10ppm by weight

The battery type and chemistry used in the product is:

CR2032 (coin cell), Li-ion

6-cell high capacity Lithium-Ion battery (optional 8 cell available)

Additional information

This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2002/95/EC.

This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive - 2002/96/EC.

This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).

This product is in compliance with the IEEE 1680 (EPEAT) standard at the Silver level, see: www.epeat.net

Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.

This product contains 0% post consumer recycled plastic (by wt.)

This product is greater than 95% recycle-able when properly disposed of at end of life.

Packaging Materials

- External:
 - Corrugated 509.4 g
- Internal:
 - Molded Pulp 58 g
 - Polyethylene low density 10 g
- The Corrugated material is made from 85% recycled content.

Technical Specifications

- The Molded Pulp material is made from 60% recycled content.
- The Polyethylene low density material is made from 60% recycled content.

HP follows these guidelines to decrease the environmental impact of product packaging:

- Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.
- Eliminate the use of ozone-depleting substances (ODS) in packaging materials.
- Design packaging materials for ease of disassembly.
- Maximize the use of post-consumer recycled content materials in packaging materials.
- Use readily recyclable packaging materials such as paper and corrugated materials.
- Reduce size and weight of packages to improve transportation fuel efficiency.
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

Material Usage

This product does not contain any of the following substances in excess of regulatory limits (for reference of these limits please refer to the HP General Specification of the Environment:

(http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html):

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants - may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Formaldehyde
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Nickel - finishes must not be used on the external surface designed to be frequently handled or carried by the user.
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) - except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)

End-of-life Management Hewlett-Packard offers end-of-life HP product return and recycling programs

Technical Specifications

and Recycling

in many geographic areas. To recycle your product, please go to: <http://www.hp.com/go/reuse-recycle> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: <http://www.hp.com/go/recyclers>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

Hewlett-Packard Corporate Environmental Information

For more information about HP's commitment to the environment:

Global Citizenship Report

<http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html>

Environment website

<http://www.hp.com/environment>

Eco-label certifications

<http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html>

ISO 14001 certificates:

<http://www.hp.com/hpinfo/globalcitizenship/environment/operations/envmanagement.html>

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